

**Notice of Allowability**

Application No.  
10/649,612  
Examiner  
Demetrius R. Pretlow

Applicant(s)  
KATO ET AL.  
Art Unit  
2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to amendment filed September 21, 2006.
2.  The allowed claim(s) is/are 1,4-8,11,12,15-18,23 and 24.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some\*    c)  None    of the:
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
(a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
    1)  hereto or 2)  to Paper No./Mail Date 6/22/06.  
(b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
    Paper No./Mail Date \_\_\_\_\_.  
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
    Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
    of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
    Paper No./Mail Date \_\_\_\_\_
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_

**DETAILED ACTION**  
**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Frank Presta on December 4, 2006.

The application has been amended as follows:

In claim 8, line 9 change “.” to --;-- .

In claim 8, line 5, delete “and” .

In claim 12, line 4, delete “and” .

In claim 12, line 8 change “.” to --;-- .

In claim 17, line 5, delete “and” .

In claim 17, line 14 change “.” to --;-- .

In claim 18, line 5, delete “and” .

In claim 18, line 16 change “.” to --;--

In claim 8, line 9, delete “.” and insert -- and outputting the state of the battery diagnosed in the diagnosing step. --

In claim 12, after line 8, insert -- and outputting the state of the battery diagnosed in the diagnosing step. --

In claim 17, after line 14, insert -- and outputting the state of the battery diagnosed in the diagnosing step. --

In claim 18, after line 16, insert -- and outputting the state of the battery diagnosed in the diagnosing step. --

Claims 19-22 are cancelled.

***Allowable Subject Matter***

Claims 1,4,5-8,11,12,15-24 allowed.

The primary reason for the allowance of claim 1 is the inclusion of the limitations of an a diagnosing section diagnosing a state of the battery **by applying a transient result** obtained from the measurement to a mathematical expression obtained by a system identification method, wherein said battery state diagnosing device applies the load to the battery as a current load. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 5 is the inclusion of the limitations of an a diagnosing section diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, wherein the load applying section applies a current to the battery when the battery is not supplied with fuel. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 6 is the inclusion of the limitations of an diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, and a diagnosing section for diagnosing, by the system identification method, a state of the battery based on a **transient result** obtained from the measurement by the measuring section. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 7 is the inclusion of the limitations of an diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, the battery being a fuel cell that is not supplied with fuel, a diagnosing section for diagnosing, by the system identification method, a state of the battery based on a result of the measurement by the measuring section. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 8 is the inclusion of the method step of diagnosing a state of the battery by applying a **transient result** obtained from the measurement to a mathematical expression obtained by a system identification

method, wherein said step of applying a load to the battery serially connects the battery to a current load. It is this step found in each of the claims, as it is **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 12 is the inclusion of the method step of diagnosing a state of the battery by applying a result of the measurement to a mathematical expression obtained by a system identification method, wherein the current is applied to the battery when the battery is not supplied with fuel, and said step of applying a current serially connects the battery to a voltage source.. It is this step found in each of the claims, as it is **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 15 is the inclusion of the limitations of the measured output characteristic is a terminal voltage of the battery; and when diagnosing the battery by system identification, an electromotive force component of a fluctuating terminal voltage of the battery is removed as a bias, and a voltage fluctuation after the electromotive force component has been removed is amplified and used for the diagnosis by the system identification. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 4 and 16 is the inclusion of the limitations of an the measured output characteristic is a terminal voltage of the battery; and when diagnosing the battery by a system identification, a fluctuating terminal voltage of the battery is separated into a perpendicular component which derives from a serial resistance of the battery, and a component representing Capacitance-Resistance dynamics; the perpendicular component is removed from the terminal voltage', and a voltage fluctuation after the perpendicular component has been removed is amplified and used for the diagnosis by the system identification. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 17 is the inclusion of the method step of when diagnosing the battery by system identification, an electromotive force component of a fluctuating terminal voltage of the battery is removed as a bias, and a voltage fluctuation after the electromotive force component has been removed is amplified and used for the diagnosis by the system identification. It is this step found in each of the claims, as it is **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 18 is the inclusion of the method step of when diagnosing the battery by a system identification, a fluctuating terminal

voltage of the battery is separated into a perpendicular component which derives from a serial resistance of the battery, and a component representing Capacitance-Resistance dynamics; the perpendicular component is removed from the terminal voltage and a voltage fluctuation after the perpendicular component has been removed is amplified and used for the diagnosis by the system identification. It is this step found in each of the claims, as it is **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 23 is the inclusion of the limitations of an a diagnosing section diagnosing a state of the battery by applying a transient result obtained from the measurement to a mathematical expression obtained by a system identification method, wherein said battery state diagnosing device applies the load to the battery as a current load, and wherein the measured output characteristic is a terminal voltage of the battery; the diagnosing section removes an electromotive force component of a fluctuating terminal voltage of the battery to obtain the transient result, and amplifies this transient result for diagnosis by the system identification.. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 24 is the inclusion of the limitations of an the diagnosing section is operable to; separate a fluctuating terminal voltage of the

battery into a perpendicular component which derives from a serial resistance of the battery, and a component representing Capacitance-Resistance dynamics; remove the perpendicular component from the terminal voltage to obtain the transient result; and amplify the transient result obtained after the perpendicular component has been removed for diagnosis by the system identification. It is these limitations found in each of the claims, as they are **claimed in the combination**, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetrius R. Pretlow whose telephone number is (571) 272-2278. The examiner can normally be reached on Mon.-Fri. 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Demetrius R. Pretlow

Demetrius R. Pretlow 12/11/06

Patent Examiner

BRYAN BUI  
PRIMARY EXAMINER

